MARGINAL LAKES AND WINTERKILL: *Here Today, Gone Tomorrow?*

By Greg Gullickson

North Dakota's anglers have been blessed in the last decade with unexpected fishing lakes due to high water levels following the wet summer and snowy winter of 1993. Above-average precipitation of the 1990s filled wetlands and created lakes where once only marshes existed.

A number of these "new" lakes were deep enough to establish and maintain fisheries for several years. In fact, the number of lakes suitable for fisheries management statewide has doubled, according to Terry Steinwand, North Dakota Game and Fish Department fisheries chief. These lakes are often referred to as opportunistic lakes.

In the last couple of years, however, dry conditions in much of the state have reduced depth and volume in a number of these lakes, making them susceptible to winterkill.

A lake is threatened with winterkill when the oxygen supply is not adequate to sustain fish, and winterkill affects each lake differently. Several processes affect the amount of oxygen available to fish under the ice.

Dying plants and decaying vegetation consume large amounts of oxygen in winter, but given the right conditions, plants can also usually produce adequate oxygen to sustain both fish and the process of decay.

Plants quit producing oxygen when deprived of light. Cloudy ice and heavy snow cover can reduce the amount of light available to plants. As the mantle of ice covering a lake thickens, the amount of light penetrating the water decreases, increasing the likelihood of winterkill.

Oxygen in the water is called dissolved oxygen and is measured in parts per million. Some fish species are less tolerant of low dissolved oxygen than others. Trout and salmon do best in five parts per million of oxygen or better, making them more vulnerable to low oxygen than other North Dakota game species.

When dissolved oxygen levels drop below two or three parts per million, game species such as northern pike, walleye and perch become stressed and some will die. Rough fish such as carp can tolerate levels as low as one part per million; bullheads can on survive with even less oxygen. A lake that has experienced some winterkill can usually be detected by the strong smell of sulfur dioxide, which is often equated with the smell of rotten eggs.

Lakes seldom experience total winterkill. Feeder creeks or springs where oxygen supplies are better are usually found by some fish. Closed system lakes are most vulnerable to winterkill as they are generally smaller and collect little runoff after the spring thaw. When partial winterkills occur, the majority of game fish die and most rough fish, survive making it challenging to restore and maintain game fish populations in these lakes.

Some things that have been done to improve the chances of certain lakes surviving potential winterkill situations run from snow removal on a lake's surface, to aeration systems that keep a small portion of a lake from freezing, allowing oxygen exchange. Many of these measures are expensive or impractical so they are not widely used.

One of the best natural processes to clear snow off lakes is wind. High winds can clear much snow from a lake and restore conditions that better allow light to penetrate the ice surface.

Many opportunistic lakes that are susceptible to winterkill will provide good fishing this winter, but it should not be a surprise if at least a few do not make it to spring. Check the November 2002 issue of *OUTDOORS* for details.

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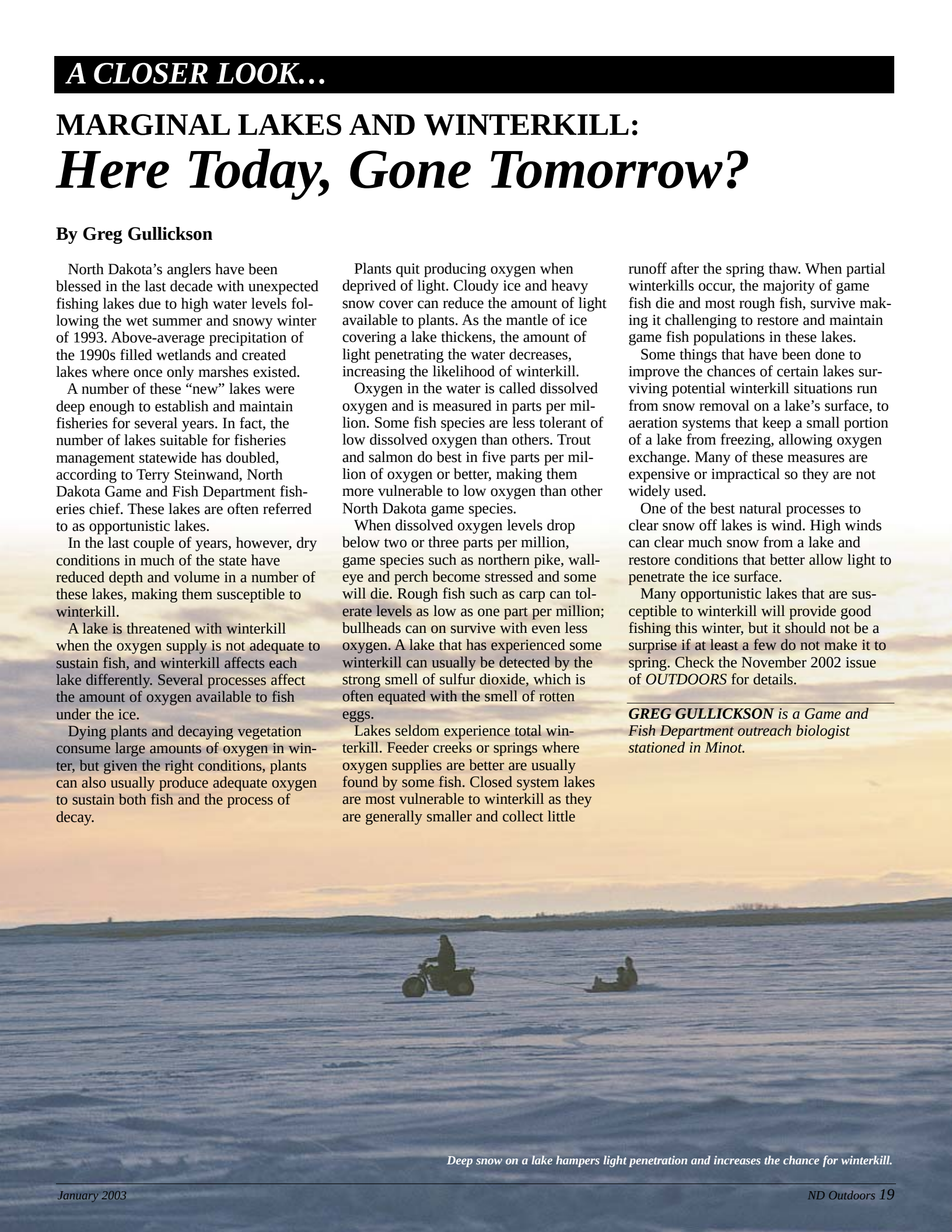

Deep snow on a lake hampers light penetration and increases the chance for winterkill.